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Safety

SYSTEM SAFETY GROUPS

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This pamphlet describes SYSTEM SAFETY GROUPS (SSGs) purpose, function, execution, and use. It contains a wealth of material based upon the experiences of successful and not-so-successful SSGs. SSGs are prescribed by AFI 91-202 and AFMC Sup 1. This pamphlet applies to all system safety managers at the AFMC product centers and logistics centers. This pamphlet does not apply to the Air National Guard or US Air Force Reserve units and members.

Chapter 1

INTRODUCTION

1.1. The System Safety Program.

1.1.1. System safety programs, established throughout the Department of Defense (DOD), incorporate safety into equipment, systems, facilities, operations, and training. The system safety program eliminates or controls hazards by design features, safety and warning devices, or special procedures and training. Special system safety personnel assigned to contractor and government program offices:

1.1.1.1. Identify actual or potential hazards, usually done by detailed analysis of the systems in question.

1.1.1.2. Assess hazards in terms of severity and likelihood. What is the worst that can happen, and how often might it happen?

1.1.1.3. Determine corrective action. Eliminate by design or control with safety devices, warning devices, or special procedures and training?

1.1.1.4. Follow-up to ensure corrective action is accomplished.

1.1.2. AFI 91-202 and AFMC Sup 1 provide the requirements for implementing system safety programs. Apply MIL-STD-882 fundamentals to SSG activities whenever possible.

1.1.3. The latest version of DOD 5000 series ties the environment, safety, and occupational health (ESOH) efforts together. Accordingly, a program might wish to establish an ESOH group instead of an SSG.

1.2. System Safety Group (SSG) Description. AFI 91-202 and AFMC Sup 1 require that an SSG be established for each major weapon system to include all aircraft. The SSG includes safety experts associated with the particular weapon system. The SSG augments the local system safety function; it is not a substitute or replacement. Therefore, many SSG members are personnel not assigned to the System Program Office, but they advise the system program manager or single manager on safety matters. They act as an integrated product team (IPT) for system safety. The members assist the program office in identifying risks, assessing these risks, and recommending solutions to these risks. Solutions can be redesign, addition of safety or warning devices, revising training or operating procedures, or accepting the risk without further actions.

1.3. SSG Functions. The SSG is an advisory group. Primarily, the SSG identifies/evaluates hazards, recommends corrective actions to resolve the hazards, and assists in prioritizing hazards to effectively manage safety risk. In order to do this, the SSG has many functions which include:

1.3.1. Validate existing system safety criteria. Are current safety design criteria adequate? Is the system safety program adequate? If not, consider additional needs.

1.3.2. Establish follow-on requirements. The SSG members will have the necessary experience to determine the best follow-on efforts that would apply for the system safety program.

1.3.3. Review and evaluate hazard analyses. Generally, the best approach is to have the results of the analyses presented to the SSG. Usually, only a small portion of the SSG will want to perform a

separate, detailed review of hazard analyses. In other cases, such as the F-22, most SSG members review and comment on the entire F-22 hazard analysis.

1.3.4. Conduct independent analyses. In some cases, individual SSG members may have the experience, expertise, and interest to conduct a separate independent safety analysis to solve a particular safety problem.

1.3.5. Review and apply mishap and lessons learned data. The SSG members will have the experience with the weapon system and similar systems to be able to apply lessons learned data from other mishaps and from field experience. Their experience will frequently augment the formal lessons learned program and the AFSC Design Handbook program.

1.3.6. Evaluate engineering and modification proposals. The program office must always perform a safety evaluation for any proposal, but quite often the SSG can provide additional evaluation. Again, this can come from the members' experience and expertise.

1.3.7. Confirm critical failure items. The SSG should confirm those components having a single failure that could cause a critical or catastrophic hazard. Once identified in the hazard analyses and confirmed by the SSG, the SSG should evaluate the risks involved, and recommend corrective action (i.e., redesign or other compensation).

1.3.8. Track safety modifications. The SSG should track safety modifications and time compliance technical orders (TCTO) until completion. If progress slows down (it usually does), the SSG can provide additional emphasis or management attention to get things rolling again.

1.3.9. Review significant (high interest) Category I Materiel Deficiency Reports (MDR) and mishap recommendations to ensure necessary and timely action is taken for correcting safety deficiencies.

1.3.10. Provide exchange of information and experience among members.

1.3.11. Prioritize hazards. The SSG should prioritize hazards based on severity and probability so that approval authorities can better determine the optimum degree of both safety and technical risk management.

1.4. AFMC Policy on SSGs. AFI 91-202/AFMC Sup 1 specifies the minimum requirements for SSGs. These are:

1.4.1. Each major weapon system (Acquisition Category 1), including all aircraft, and for some ground facilities and electronic installations requires an SSG; unless waived by HQ AFMC/SES.

1.4.2. Meet at least annually. If the SSG convenes less frequently, members will lose continuity with the program and with each other. HQ AFMC/SES encourages more frequent SSGs for some weapon systems but has left the meeting frequency up to the individual SSG.

1.4.3. It's a good idea to augment SSGs with system safety working groups (SSWG)s when appropriate, described in Chapter 5. The SSWG cannot substitute for an SSG.

1.4.4. The System Program Manager (SPM) or Single Manager (SSM) or his/her deputy chairs the meeting. He or she should chair the entire meeting, not just provide introductory remarks and then turn over the reins to someone else. His or her presence adds emphasis to the meeting. It also makes the members feel like they're really contributing to the meeting. The members will also benefit by getting the straight story directly from the SPM or SSM. The SPM/SSM benefits, too, by hearing the

members' inputs firsthand. Finally, the SPM/SSM can make SSG decisions on the spot instead of deferring them.

1.4.5. SSG membership will consist of the organizations listed in paragraph 1.5. Some organizations are advisory members (i.e., no voting power). For example, AFMC/SES is frequently an advisory member mainly because they cannot attend all SSG meetings. If an organization cannot regularly attend SSG meetings, then don't list it as a primary or voting member.

1.4.6. Send meeting notices to all participants 45-60 days before the meeting. This meeting notice will give date and place of the meeting, the point of contact, and a preliminary agenda. The notice should ask members to provide attendee data and additional agenda items by 30-45 days before the meeting.

1.4.7. Provide a final agenda to each SSG participant 14-30 days before the meeting. This will give members sufficient time to research the problem or to get a unit or command position on the subject. If there are insufficient agenda items to warrant a meeting, then notify members that the meeting is canceled. (If you do that, then be sure to outline what's going on for the few safety items and provide a point of contact for questions.)

1.4.8. Publish and distribute meeting minutes within 30 calendar days after the meeting. You should also send provide minutes to member organizations that were unable to send a representative to the meeting.

1.4.9. As a minimum, meeting minutes must include open action items, action agencies, suspense dates, and status of proposed corrective actions. Minutes should have enough information to describe SSG deliberations and results for those that were unable to attend the meeting.

1.5. SSG Members and Advisors. This paragraph describes the SSG members and advisors. In general, SSG members are those organizations that are needed for each meeting and have the power to vote on issues that arise. Advisors, on the other hand, are those who provide guidance and advice on certain issues. They are not always required to attend each meeting and usually do not have voting power. Each program can choose its own SSG members and advisors and must identify them in its SSG charter.

1.5.1. System program manager (chairperson). The SPM/SM or their deputy is the SSG Chairperson, usually the full colonel program director or division chief. In a few cases, a general officer has chaired an SSG. This provides great emphasis to an SSG meeting, but can stifle communications - some people are hesitant to speak their minds in front of a general officer.

1.5.2. Program engineering. Usually members of the local engineering branch or integrated product team (IPT). They can provide technical advice and arrange for technical briefers.

1.5.3. Program system safety representative. The system safety program manager (SSPM) assigned to the particular weapon system. This individual generally sets up and administers the meeting and writes the meeting minutes.

1.5.4. Center safety office. The full-time center system safety manager (CSSM) or, in his or her absence, the full-time flight safety representative, for aircraft SSGs; and the weapon safety officer for missile SSGs. Due to funding issues the CSSM will usually only attend those SSGs that are being held at the center and require no TDY funds.

1.5.5. HQ AF Safety Center (HQ AFSC). The system or flight safety officer (HQ AFSC/SEF) or weapons safety officer (HQ AFSC/SEW) assigned to the weapon system. For developing systems,

AFSC will provide a system safety representative (HQ AFSC/SEPP). Each individual usually serves as an advisor.

1.5.6. HQ AFMC Safety Office. This advisor will come from the system safety office (HQ AFMC/SES) or, in his or her absence, the flight safety office (SEF) for aircraft and the weapon safety office (SEW) for missiles.

1.5.7. AFMC Directorate of Requirements (DR). This member will be the AFMC individual responsible for the particular weapon system. Usually from HQ AFMC/DRJ, -DRR, or -DRX.

1.5.8. ALC Materiel Safety Officer (MSO). Primary interest is relationship of SSG issues to Materiel Safety Task Group issues.

1.5.9. Using MAJCOM safety office. Each using command (i.e., ACC, AMC, etc.) will provide a member from its staff safety office. Some safety representatives may be accompanied by MAJCOM operational or maintenance staff members. In some cases, more than one major command will participate. For example, the F-15 SSG has representatives from ACC, USAFE, and PACAF.

1.5.10. Numbered Air Force (NAF). The NAF flight or weapons safety officer.

1.5.11. Each operational unit (optional). The flying safety officer (FSO) from each flying unit (wing or group) possessing the weapon system or, in the case of missiles, the missile safety officer. For some SSGs, this can be a large number of personnel. We've seen over 100 attendees at SSG meetings. In this case, it may be better to have the MAJCOM safety office represent the individual operational units.

1.5.12. Product Center system program office. Will send the SPO system safety officer/manager to SSGs for systems in which the system manager resides at a logistic center.

1.5.13. ALC product directorate. May send the local SSPM to SSGs for systems managed by a product center.

1.5.14. Foreign military sales programs will result in SSG members from other countries possessing the weapon system. This should create no additional problems. Sanitize mishap data for presentation at SSG meetings, so there will be no releases of sensitive data (AFI 91-204). You may have an awkward situation if two countries possess the same weapon system, but are not friendly to each other.

1.5.15. Test centers - from the Air Force Flight Test Center (AFFTC) and the Air Force Operational Test and Evaluation Center (AFOTEC) when involved with the particular weapon system. Responsible Test Organization (RTO) and Participating Test Organizations (PTOs) should also be invited.

Note: The AAC/SES personnel will greatly assist in determining if the weapon system can be approved by the Non-Nuclear Munitions Safety Board (NNMSB). AAC/SES are the engineering/technical advisors to the NNMSB and their expertise is recognized by the NNMSB and the Navy's Weapon Explosive Safety and Evaluation Review Board (WESERB). AAC/SES' review of the weapon system design, modification, and/or integration onto the aircraft will pay big dividends in the long run.

The local flight test office can inform the SSG on the flight tests of modified aircraft.

1.5.16. Supporting ALCs. To support the primary ALC as required. For example, OC-ALC or SA-ALC may send an engine representative, or OO-ALC may send a landing gear representative.

1.5.17. Contractors. Airframe and major subsystem (e.g., engine) contractors may provide technical advisors to SSG meetings.

1.5.18. Human factors. This subject has been gaining more interest at SSG meetings, so the center human factors representative should participate.

1.5.19. Using command maintenance personnel. These individuals usually attend SSGs that convene in conjunction with other forums, such as product improvement working groups (PIWG). These individuals can provide excellent advice for field problems, such as completing TCTOs.

1.6. SSG Charter. The SSG is a chartered group. The charter will establish the purpose and scope of an SSG, its function, limitations, and membership. It should:

- Outline the SSG tasks and responsibilities and provide the authority for assigning and completing action items.
- Cover the procedures for handling SSG recommendations and action items including disagreements.
- List member organizations, particularly those responsible for setting up and chairing the meeting.
- In the list, use member organizations only not individual names, which change too frequently.

A sample SSG charter format is in attachment 1. Coordinate the draft charter with the proposed SSG members and advisors. Members should approve the charter at the first meeting or shortly thereafter. The final charter should be signed by the SSG chairman.

1.7. Characteristics of SSGs at Logistics Centers. System safety groups were originally for development programs managed by product centers. Eventually, SSGs supported ALC-managed systems and, as a result, became involved with on-going operational systems instead of developing systems. These SSGs developed their own unique characteristics:

1.7.1. They primarily work problems that come from actual operational use of the system.

1.7.2. They rarely perform, review, or evaluate hazard analyses. However, SSGs need to evaluate hazard analyses for major modifications.

1.7.3. Some tend to be very large, due to the number of operational units that send members to the meetings. Some SSGs also have members from foreign countries that also own and operate the weapon system.

1.7.4. SSGs complement Materiel Safety Task Groups (MSTG). Both groups have the ultimate goal of eliminating or controlling hazards, but there are two main differences:

1.7.4.1. The SSG deals with identifying potential hazards before they cause mishaps, while the MSTG deals with reported hazards associated with operating the system.

1.7.4.2. Most MSTGs consist only of center personnel while the SSG consists of members from many organizations, particularly those operating the system.

Chapter 2

MEETING PREPARATION

2.1. Introduction. You've received coordination on the draft SSG charter-it is time to hold the first meeting. This chapter describes the final preparations for the first and subsequent meetings. The chapter is written to describe the efforts for a separate SSG, but many organizations prefer to combine an SSG with another meeting, such as a program review or product improvement working group meeting. There is nothing wrong with this idea, and it provides a chance to save considerable man-hours and TDY costs.

2.2. Establish the Meeting Date.

2.2.1. Be sure the SPM and the SSPM will be available. These are the key people. The SPM chairs the meeting, but the SSPM really runs things. It's a very good idea to coordinate the proposed date with the local CSSM and the AFMC system safety office (HQ AFMC/SES) to be sure there are no conflicts with other meetings. After confirming the date, send notification to all SSG members at least 30-45 days before the meeting date. In this notification, ask for attendee data (name, grade, organization, etc.) and ask for new agenda items. Be sure to get this information at least 30 days before the meeting so you can send out a final agenda two weeks before the meeting.

2.2.2. Ask for detailed agenda items. Some SSG members will provide only a list of subjects. They should provide background information and state expectations of the SSG (i.e., design fix, special procedures, etc.). If a particular member fails to provide adequate details, call the member and get the details. If you ignore the item due to insufficient knowledge, be prepared for the item to come up at the meeting, anyway, because it will. We've seen this happen with the SPM and his staff unprepared to address the issue.

2.2.3. Be ready to change the meeting date if a schedule conflict occurs. This can easily happen. We've seen one SSPM spend Friday afternoon on the telephone calling all the SSG attendees that the following week's meeting got postponed. Fortunately, everyone got the word before they started their travel.

2.3. Meeting Location. Set the place for the meeting. Obviously, this can affect the meeting date; if the favorite conference room isn't available on a particular meeting date, then move it to another date. About the meeting location:

2.3.1. Avoid auditoriums; use a conference room setup. Have the SSG members feel like meeting participants, not observers.

2.3.2. Anticipate a crowd. Some members bring additional people. In addition, many unannounced people will show up or stick their heads in the meeting. It's tough to accurately guess the number of attendees. We've seen as few as six and as many as over 100 attendees.

2.3.3. Have good visual aid facilities. You might need a vugraph capability and may need a blackboard/whiteboard, 35mm slides, or videotape facility. Electronic briefing aids, such as Powerpoint projectors, really make things run smoothly, but have backup charts available. Sometimes the electronic equipment does not work properly or is incompatible with the briefers' software. Occasionally, you might be unable to find an operator with sufficient knowledge of the equipment. Practice using it before the meeting. Be sure that someone present has the necessary password to start up the electronic system for the meeting.

2.3.4. Use a centrally located conference room, such as the organization's main conference room. This will allow easy access to engineers and technicians that may have answers to problems being worked by the SSG.

2.3.5. Sometimes contractor facilities host SSGs instead of program offices. This has the advantages of tapping the experts who are on-site to answer questions and showing the production line or actual hardware. The only disadvantage is the administrative headache of visitor clearances to the facility.

2.3.6. One SSG holds some of its meetings at a hotel near the contractor facility. This might have the additional cost of renting a conference room, but largely eliminates the administrative headaches of visitor clearances, particularly for foreign country representatives.

2.3.7. Don't be bashful about charging a 'registration fee' or something similar to cover the costs of providing refreshments and for printing meeting materials. We all have budget problems. If they can afford to come to the meeting, they can afford a small additional fee, which is reimbursable on their travel orders.

2.3.8. Some SPOs have held an SSG via the video-teleconference (VTC) method. This can save a bundle of TDY costs, but you'll deal with other factors:

2.3.8.1. If you want to communicate with many locations, it can be very difficult to schedule all the locations simultaneously for a VTC. We've seen waiting times of over two months, and you can still get pre-empted by the local commander.

2.3.8.2. Schedule VTCs for only one day. It's difficult to schedule a VTC for more than two hours. It's quite difficult to cover all SSG items in only two hours. Some SPOs control the network; so longer VTCs can be done, but keeping the SPD in the SSG while at the base for more than one day can be very risky.

2.3.8.3. Choreography can get awkward. Make sure someone really knows how to run the equipment. During one VTC, we sat there for several minutes listening to one AFB while viewing another attendee at another AFB who didn't know he was 'on the air.'

2.3.8.4. In spite of the fact that more people are getting used to VTCs, there are still a number of people who are hesitant to speak up while 'on the air'. Although we might appear overly cautious about using a VTC, we recommend that it be used whenever practical. People are getting more and more used to the idea and are more amenable to using a VTC to save valuable TDY costs. For small groups, such as SSWGs, a VTC can be very practical.

2.3.9. We have heard of SSG telephone conferences and do not recommend it, unless time or funding is really tight. It is difficult to discuss items over the phone without seeing the charts or any object. Therefore, if someone 'dials in,' be sure that they have the presentation material beforehand.

2.4. Briefers. Give advance notice to the folks that will be briefing the SSG. Schedule the briefers according to the SSG agenda. Be sure to get the right person to do the briefing. A substitute briefer may not be able to answer all the questions. By the way, the most common question is something like: "When will this problem be fixed, or when will this modification be completed in the field?" This is a tough question, but briefers should be able to provide an idea when the mod is complete. Other appropriate questions are "What hazard category is this deficiency" and "What risks are associated with continued use until the modification is completed?" The SSG should consider these questions to determine priorities for corrective actions. Encourage the briefers to have good quality briefing aids with illustrations. One

picture (even if it's a page from a technical order) sure helps to clarify what the subject is really about. Briefers and other SSG personnel should have a professional appearance. A sloppy or disinterested person can create the impression of not caring about his or her job or the SSG.

2.5. Arrangements. Good attendee arrangements can really get a meeting off to a good start. If SSG attendees feel well cared for, they will certainly be more positive about the meeting and will be more productive.

2.5.1. Billeting for attendees can be handled in a number of ways. The SPM staff can arrange for all billeting by making reservations for all attendees. This provides good control and keeps the attendees together but creates more workload. An easier way is to have each attendee make his or her own arrangements. (The notification message should provide the billeting office phone number or a point of contact for off base billeting information.) This method relieves the SPM staff of additional workload. It also allows attendees to handle any special arrangements, such as staying longer for other meetings, or bringing along family members. In these cases, attendees are better off handling their own billeting arrangements.

2.5.2. In some cases, arrange transportation, since some attendees will not have cars at their disposal. Most SSGs at one particular base have centralized on-base billeting with bus transportation to and from the meeting site. This has worked exceptionally well for SSG attendees. It also alleviates a chronic parking problem at the meeting location.

2.5.3. Place cards at the table help identify SSG members. Generally, the place card should identify the member's name and organization.

2.6. Final Agenda. Provide the final agenda to each SSG member at least two weeks before the meeting. The agenda should list the subject, times, and briefer or OPR. Some SSGs provide an agenda package that gives background information and points of contact for each agenda item. Such a package allows each SSG member to be better prepared for each agenda item. This should help avoid any surprises or misunderstandings at the meeting.

2.7. Brief the SPM. It's important to brief the SSG chairperson (hopefully the SPM) before the SSG. This will assure that he or she is familiar with all SSG items and will be ready for controversial items or other possible surprises. The SSPM should sit down with the SPM and go through the agenda. If the SPM wants to change anything, this is the time to do it. Give the SPM the full name and organization of each briefer so that introductions will go smoothly.

Chapter 3

THE MEETING

3.1. Introduction and Welcome. The SPM calls the meeting to order, introduces himself or herself, and welcomes the attendees. The SPM or SSPM then provides any administrative remarks, then each member and attendees should introduce themselves to the group. This will ease communications and give members a chance to know each other better.

3.2. Review the SSG Charter. Review it for accuracy and currency. Usually, the only changes are to the membership list. The best approach for reviewing the charter is to pass out copies to the members and have them recommend any changes. Don't read aloud the entire charter; that can get boring.

3.3. Review Past SSG Minutes. It's a good idea to ask the SSG members if there are any recommended changes to the minutes of the last meeting. Normally, there aren't any, but ensure clarification of errors or omissions.

3.4. Program Status Briefing. After the introductions, the SPM should give a briefing on the status of the weapon system program. This briefing should cover the fleet status, major milestones, and significant modifications and other efforts. Some SPMs use a briefing that was prepared for a program assessment review or other purpose. In any case, the briefing will set the stage for the SSG.

3.5. Mishap Briefing. The SSG member from HQ AFSC should give a mishap briefing that shows mishap rates and trends, and highlights significant mishaps since the last meeting. Be sure to sanitize these briefings, i.e., omit specific names, places, and tail numbers, so that the SSG doesn't run into the privileged information problem (AFI 91-204). This briefing should also include the AFSC areas of high interest and concern.

3.6. Review Safety Modifications. SSGs review the status of safety modifications at each meeting. This requirement came from the AFSC Board Look study in 1981 and certainly makes sense. The purpose of this review is to have SSG members identify problems with getting a safety modification completed and to recommend corrective action. This review also gives the SSG members an opportunity to see what safety modifications are being done. Some SSGs have varied their definition of safety modifications. We have seen the following included in different SSGs:

3.6.1. Safety modifications.

3.6.2. Safety-coded Engineering Change Proposals (ECP).

3.6.3. Safety-coded Time Compliance Technical Orders (TCTO).

3.6.4. Recommendations from significant (e.g., Class A) mishaps.

3.6.5. Someone's own idea of "what affects safety".

3.6.6. Review of the high accident potential (HAP) messages with AFMC recommendations that have occurred since the last meeting.

Which of these require review? All of them; they all affect the overall safety of the weapon system. How is the review done? Review can be done by any suitable method, such as handouts or briefing charts listing the modifications and their status. A knowledgeable person should be there to answer questions.

3.7. Review Hazard Analyses. Occasionally, an SSG will need to review a hazard analysis. If this should happen, arrange for a presentation of the results of the analysis, i.e., significant hazards identified and their corrective action. Some SSG members might lack the specific training to conduct a detailed review of a hazard analysis, but all the members take interest in the results. There may be a few members who wish to review a detailed analysis. These members can form a separate SSWG to review the particular analysis and report back to the SSG.

3.8. Briefings. A briefing of some sort covers most SSG discussion and action items. Some briefings are straight from the table, but the majority use charts or other visual aids. Based on our experience with SSGs, we'd like to pass on some lessons learned (constructive criticism) about briefings.

3.8.1. Briefers should have a professional appearance and attitude. Sloppy briefers come across as if they don't care about their job or the SSG.

3.8.2. Use visual aids. Let's face it a picture is worth a thousand words. Even briefing aids without pictures will really improve communications. Remember, people retain most of what they see and hear.

3.8.3. Use illustrations. Explaining a hardware item is much easier if the briefing includes a picture or drawing of the item. In many cases, a picture of a tech order page will easily suffice. The illustrations should show the item location and what it looks like. Sometimes a cutaway illustration will help a discussion, but do not overdo it. We have seen more than one SSG get lost going through a detailed cutaway illustration. Electrical schematic diagrams can be risky, too. Chances are most SSG members can't read a detailed schematic. Some briefers, however, have successfully used simplified redrawn schematics to get their point across. A combined picture and text briefing chart (attachment 2) really gets the point across.

3.8.4. Provide some background on the subject because SSG members may not be familiar with the subject. This is usually due to high turnover of members, but can also happen if the item has only been a problem for some units. Other units could use the background in case they run into the problem later.

3.8.5. List alternate solutions, and provide a rational for the one selected. Some SSG members may have experience in the particular area and may offer improvements.

3.8.6. Provide the exact present status of the problem and the predicted get well date. The most frequently asked question will be: "When will we see this fix (solution) incorporated in the field?" Briefers should have some idea of the answer, but a precise answer is almost impossible thanks to the bureaucratic maze we live in.

3.8.7. Other questions will pop up and the briefers may not have all the answers. In these cases, research the answers before the end of the SSG meeting, if possible, or contact the person who asked the original question. If that's not possible, provide the answers in the minutes to the meeting. Don't wait until the next SSG meeting, which may be a year away.

3.9. Operating Problems. During the meeting, several operating problems will crop up. The following subparagraphs describe some of these problems and methods of coping with them. Most of the responsibility lies with the chairperson, so he or she will need a good understanding of SSG philosophy and functions.

3.9.1. Defining the problem can be difficult at times. In some cases, the members can't even decide: "Is this a safety problem?" The best person to answer the question should be the local program SSPM, but the chairperson will make the final decision. Some members will use the forum to air out a particular issue as "discussion items"; any requiring safety resolution are then defined as "action items" and formally tracked.

3.9.2. Getting sidetracked from the central problem can slow down a meeting's progress. If sidetracking identifies a separate safety issue, handle it as a new action item or as a separate SSWG. Otherwise, keep the discussion on track. Again, the chairperson should hold the meeting together.

3.9.3. Don't be too eager to close an item. We have seen some cases when an item was closed before reaching a full solution. It's hard to say exactly when to close an issue, but the SSG should continue to work an item at least through approval by the Configuration Control Board, or other appropriate milestone. After that point; the SSPM will monitor the item to ensure that its completion doesn't get bogged down.

3.9.4. A consolidated user opinion or position is necessary for resolving an SSG issue. There are two types of user problems:

3.9.4.1. One using command (e.g., ACC) may agree with a particular solution, while another (e.g., USAFE) may disagree. The SSG will need to vote on the issue, and other using commands may carry the vote one way or the other.

3.9.4.2. A single using command may be unable to come up with a consolidated position. One using command's safety staff could not agree with the operations and maintenance staffs over an SSG fire protection issue, so the chairperson tabled the issue until they could. If a using command headquarters sends only safety people to an SSG meeting, try to make sure they can speak for the entire using command headquarters. If they cannot, then they must be able to get a consolidated position from their home command.

3.9.4.3. Some SSG members may want to design a solution on the spot. Nice idea, but it's best to assign that work to someone with detailed knowledge, and to give that person enough time to study the problem thoroughly before recommending a design solution to the SSG.

3.9.5. Good leadership is a must for an effective SSG meeting. It's important to have the SPM chair the meeting and to have him or her convinced of the importance of the meeting. During one SPM's introduction, the SPM went on to say how important the meeting was, etc. The SPM then left the SSG for another meeting, and never returned. What does that do for meeting effectiveness?

3.10. SSPM Actions. The SSPM will probably be the busiest person during the meeting. He or she should:

3.10.1. Show up early to turn on lights, coffee pot (include sugar, cream, stirrers, etc.), and make sure audio and visual aids and other devices work. Make sure someone knows how to use the high-tech briefing aids.

3.10.2. Sit next to the chairperson and keep things in order.

3.10.3. Begin and circulate an attendance list to include attendees' name, organization, and phone number. Distribute copies, typed if possible, before the end of the meeting.

3.10.4. Think two or three agenda items ahead in order to line up presenters and to take care of schedule glitches.

3.10.5. Suggest SSWGs when needed.

3.10.6. Make administrative announcements.

3.10.7. Record all SSG action items and give the list to the chairperson so he or she can summarize them at the end of the meeting.

3.10.8. Have SSG members fill out SSG action items when applicable. Consider completing SSG action items using the format suggested in attachment 3.

3.10.9. Maintain an SSG action item log to keep track of open action items. This log should have entries for item number, subject, initiator, OPR, reply due date, and status.

3.10.10. Take as many notes as necessary to facilitate writing the meeting minutes.

3.11. Concluding the Meeting:

3.11.1. When the meeting ends, do not just send everyone off. A good meeting needs a good conclusion. Summarize key items and read aloud (or pass out) all action items so that everyone goes home with a complete understanding of each task. This final action item review should identify the specific action, who should do it, and when. Identify specific suspense dates and avoid 'by the next SSG meeting" which may be a long time later.

3.11.2. One of our centers conducts 'customer satisfaction' surveys at its SSGs. Near the end of each meeting, each attendee gets a form allowing him or her to provide anonymous comments on the operation of that SSG. This information can be beneficial for future SSGs.

3.11.3. While everyone is still there, set the date for the next meeting. If some won't agree to a specific date, at least get everyone to agree on the approximate time (month and year) and place for the next meeting.

3.11.4. Finally, thank everyone for their contribution, and keep things on a positive note.

Chapter 4

AFTER THE MEETING

4.1. Write the Meeting Minutes. Fortunately, there is no standard or regulatory format for minutes of the meeting. As a result, some minutes are in letter format, while others are a package or book with each page detailing an action item. The format does not matter as long as the minutes communicate essential information i.e., what happened during the meeting? Minutes should include at least the following:

   4.1.1. The agenda that can serve as a "table of contents."

   4.1.2. The SSG charter so members will have the most current version.

   4.1.3. The list of attendees with organizations and telephone numbers.

   4.1.4. Narrative summary of the SSG proceedings for each discussion item and action item. The minutes don't need to be long, but there should be enough narrative so that members who missed the meeting will know what happened. For reference purposes, the minutes should include the rationale for all SSG decisions.

   4.1.5. Presentation materials, such as briefing charts, are optional. Usually, the best approach is to provide charts that really help the minutes. Some SSG minutes include no charts while others include every single chart. It's up to the individual SSG. If the minutes include many charts, we suggest reducing the size so that two charts fit on a single page, unless the charts cannot be read in the reduced size.

   4.1.6. The minutes should definitely include a list of action items. This list should spell out what tasks, who will do it, and when. Be sure the action agency has accepted the action item; don't surprise them in the minutes.

   4.1.7. Plans for the next meeting. Usually the exact date and location will not be available, but at least include the general location and approximate date (e.g., 'June 1999 at Wright-Patterson AFB').

4.2. Publish the Meeting Minutes. Sometimes publishing the minutes can be tougher than writing them. Minutes need to be written, then approved by the SSG chairperson. They can be copied (usually by base printing because of their size and number of copies) and finally put in the mail. The total process takes some time which can vary greatly. (We've seen as few as eight days between the meeting and distribution of minutes and we've seen it take 5 months. Our policy is 30 days after the meeting, and all SSGs should be able to meet that deadline.) Two easy ways to distribute minutes: e-mail, and the Internet. (In the case of the internet, publish the minutes on your organization's home web page.) Both methods can be significant time and cost savers, and nearly everyone has the technical capability, so this can work very well. Supporting briefing charts can easily accompany the minutes in either case.

4.3. Distribute the Meeting Minutes. We recommend that SSG meeting minutes be distributed to the following:

   4.3.1. Each SSG member, whether they attended or not.

   4.3.2. Each office that provided an attendee, even if that office is not a member.

   4.3.3. The HQ AFMC safety office (AFMC/SES).

   4.3.4. The Air Force Safety Center (AFSC/SEPP).

4.3.5. Your Center safety office.

4.4. Follow-up.

4.4.1. Much to their credit, a few SSGs provide interim action item status to all members between meetings by letter, message, etc. The E-3 SSG has successfully used an action item progress report (attachment 4) to request updated status from action agencies. These ideas really help to keep actions going and to keep members aware of what's going on without the expense of holding more frequent meetings. In the interests of flexibility, we have not made this a requirement but we certainly encourage other SSGs to do the same.

4.4.2. If you conducted a customer satisfaction survey of any sort, review it for improvements for future SSG meetings.

Chapter 5

SYSTEM SAFETY WORKING GROUPS (SSWG)

5.1. What is an SSWG? Think of an SSWG as an informal, local subset of an SSG. An SSWG is usually formed when a full SSG wants to research a problem but does not want to tie up the full membership. The SSG will generally form an SSWG to work a problem separately and report back to the SSG. An SSWG augments an SSG; it's not a substitute.

5.2. Characteristics. An SSWG operates somewhat like an SSG, but has different characteristics.

5.2.1. An SSWG usually works a single problem or issue, then disbanded - much like a process action team (PAT).

5.2.2. SSWG membership is limited, usually to local engineering and safety personnel, and to other interested parties. Membership depends on the given situation. There are no regulatory requirements for SSWG members.

5.2.3. SSWGs generally don't need a charter.

5.2.4. The local SSPM is a more appropriate chairperson for working groups - not the SPM.

5.2.5. There are no requirements for SSWG meeting minutes; however, the SSWG may need to write minutes to document their findings and to present them to the SSG.

5.3. Examples of SSWGs. SSWGs can be formed for many problems. Examples are:

5.3.1. Evaluating the system safety program for an engine used in an aircraft.

5.3.2. Assisting a contractor performing a hazard analysis on modified weapons jettison circuit.

5.3.3. Recommending employment of a new fire detection and fire suppression system.

5.3.4. Drafting aircrew procedures during hot refueling of an aircraft.

CRAIG WOLFENBARGER, Colonel, USAF
Director of Safety

Attachment 1

F-X SYSTEM SAFETY GROUP (SSG) CHARTER

A1.1. Introduction:

A1.1.1. A System Safety Group (SSG) is required in accordance with AFI 91-202, Chapter 9 and AFI 91-202, AFMC Sup 1, Chapter 9. A System Safety Working Group (SSWG) may also be established and convened at the direction of the SSG Chairperson. The SSG membership and operating procedures detailed herein are intended to fulfill the applicable requirements of Air Force policy directives established to ensure the safety of the F-X weapon system operations.

A1.2. Purpose:

A1.2.1. The F-X SSG is established to consider actual and potential safety problems associated with operation and maintenance of the F-X weapon system with emphasis on mishap prevention. The SSG is to identify, discuss, and define safety issues related to the F-X weapon system. The purpose is to provide the System Program Manager (SPM) risk assessments with recommendations on the relative priorities when resolving valid safety deficiencies/issues. Decisions of the SSG will constitute recommendations to the SPD. The SSG or SPD may withhold a decision until A Program Management Review or Executive Review, as appropriate.

A1.3. Functions:

A1.3.1. Coordinate all safety related activities pertaining to the F-X weapon system.

A1.3.2. Take advantage of special experience and expertise of members and advisors.

A1.3.3. Identify, track, and resolve specific safety problems or deficiencies.

A1.3.4. Review, evaluate, and augment the safety analyses of hazards.

A1.3.5. Consider differing viewpoints on the systems' design, operation, or test results before arriving at a safety position.

A1.3.6. Identify safety critical items and assess critical single-point failures.

A1.3.7. Review safety related engineering change proposals, deviations, and waivers.

A1.3.8. Consider lessons learned on similar aircraft and missions to help avoid or eliminate potential hazards.

A1.3.9. Monitor corrective action on safety deficiencies which have been identified by Hazard Analyses, mishap investigations, and deficiency reports.

A1.3.10. Review testing procedures that are brought before the group which are used to verify safety of flight requirements.

A1.3.11. Ensure Technical and Flight Manuals (dash one) are thoroughly reviewed to determine that necessary caution and warning notes and emergency procedures are included.

A1.3.11.1. Act as a sounding board for safety issues identified by its members.

A1.3.12. Review aircraft modifications for safety considerations.

A1.4. Authority:

A1.4.1. AFI 91-202, Chapter 9, and AFI 91-202, AFMC Sup 1, Chapter 9, provides the authority to establish the SSG. All findings of the SSG constitute recommendations to the SPD.

A1.5. Chairperson: A1.5.1.The Deputy System Program Manager (SPM) is the Chairperson of the SSG. Action items will be assigned by the SSG Chairperson, who has final approval authority for the SSG minutes.

A1.6. Membership:

A1.6.1. Permanent memberships for the SSG will include representatives from the organizations listed in the attachment to this charter. Members may be added or deleted from the list as deemed necessary by the Chairperson.

A1.6.2. Members are selected because of their close association with the operation, maintenance, design, testing, and deployment of the system. Member participation in the SSG is essential to provide an understanding and interpretation of the requirements from which the system design developed, and to provide an input for their organizations on issues that arise throughout the life cycle of the F-X weapon system.

A1.6.3. Membership responsibilities:

A1.6.3.1. Respond to action items assigned by the Chairperson.

A1.6.3.2. Have the authority to express or be responsible for getting the official position of their organization regarding the F-X system safety issues.

A1.6.3.3. When notified of an SSG meeting, submit to the SPM recommended agenda items as required. Be prepared to brief the SSG on the proposed agenda item, describing the area of concern.

A1.6.3.4. When notified of the SSG agenda items, be prepared to discuss and act upon the agenda items.

A1.6.3.5. When assigned action items, be prepared to report the findings and results by the established suspense to the SSG.

A1.6.3.6. Attend all F-X SSG meetings. If an alternate is sent, that person must be thoroughly briefed on the status of the program and be prepared to actively participate in the meeting.

A1.6.3.7. Be familiar with the applicable system safety documents.

A1.7. Advisors:

A1.7.1. Advisors to the SSG will include, but not be limited to, representatives from organizations listed in the attachment. Additional advisors may be summoned as deemed necessary by the Chairperson.

A1.7.2. Advisors provide specialized expertise to the Chairperson and the SSG with updates on regulatory and policy changes as they pertain to the F-X program.

A1.7.3. Advisor responsibilities:

A1.7.3.1. When assigned action items, be prepared to report the findings and results by the established suspense to the SSG.

A1.7.3.2. Thoroughly study issues assigned to them and provide a qualified opinion and/or recommended action, as applicable, to the SSG.

A1.7.3.3. Act as a safety liaison between their respective organization and the F-X SSG.

A1.7.3.4. Furnish their organization's policy guidance applicable to the F-X System Safety Program.

A1.7.3.5. Provide additional, qualified guidance and information to the SSG on F-X safety issues ass related to their specialty.

A1.8. Administration:

A1.8.1. The central point of contact and coordination for SSG meetings is ABC/XYZ, Building 350, 750 3rd Street, Smythington AFB CA.

A1.8.2. The system safety program manager (SSPM) will record SSG meeting proceedings and generate and distribute meeting minutes.

A1.8.3. The SSPM will ensure approved meeting minutes are compiled and distributed to all SSG members, advisors, and attendees within 30 days following the meeting.

A1.8.4. Report on action items will be in briefing format to the SPD and included in the SSG minutes.

A1.8.5. Recommendations will be annotated in the minutes.

A1.8.6. All organizations listed in the attachment are responsible for providing to the SSPM a list of names designating their primary and alternate members of the SSG.

A1.8.7. The basic approach for the F-X SSG will be to require majority agreement. However, the final decision lies with the SPM. In the case of an unresolved disagreement, individual reports may be submitted to the SPM within 10 (calendar) days after the SSG meeting for inclusion into the minutes as a matter of record. Unresolved issues may become agenda items for the Program Management Review or Executive Review.

A1.8.8. Changes to the charter can be recommended to the SSG by any member. Changes to the charter will be discussed along with the recommended written change submitted to the SSG Chairperson. This will be annotated in the minutes and discussed and voted on at the next SSG. A simple majority will rule.

A1.9. System Safety Working Group (SSWG):

A1.9.1. A SSWG can be established at any time by the SSG Chairperson for the purpose of evaluating and providing recommendations to the SSG on specific safety issues. The SSWG would therefore be a subset of the SSG. Membership of the SSWG will consist of selected SSG members plus selected technical advisors as deemed necessary by the SSG Chairperson. The findings of the SSWG will be reported to the SSG Chairperson and reviewed at the subsequent SSG.

A1.10. General:

A1.10.1. Action Item Log. The AI log will be reviewed by all members on an "as required" basis. If a disagreement in closure status exists, or if a significant level of risk must be accepted, the issue will be addressed by the SSG. The AI log status will be presented at each SSG meeting. All Action Items and Hazards will be tracked. The database will be updated by the SSPM.

A1.10.2. The SSG will meet at least twice a year, approximately 45 days prior to the Program Management Review and Executive Review. The schedule will be determined by the SPM.

A1.10.3. Notice of SSG meetings will be forwarded to members and advisors at least 30 days before the meeting.

A1.10.4. The SPD will make the final decision on all F-X safety issues. Consideration will be given to the inputs and recommendations of SSG members and advisors.

Table A1.1. Attachment To Charter.

SSG Members
SPM Deputy (Chair)
System Safety Program Manager
AFSC/SES
ACC/SE
9AF/SE
Wing/SE
AFFTC/SE
System Safety Group Advisors
SPO Engineering
ASC/SES
AFMC/SES
AFMC/DRB
ACC/DRP
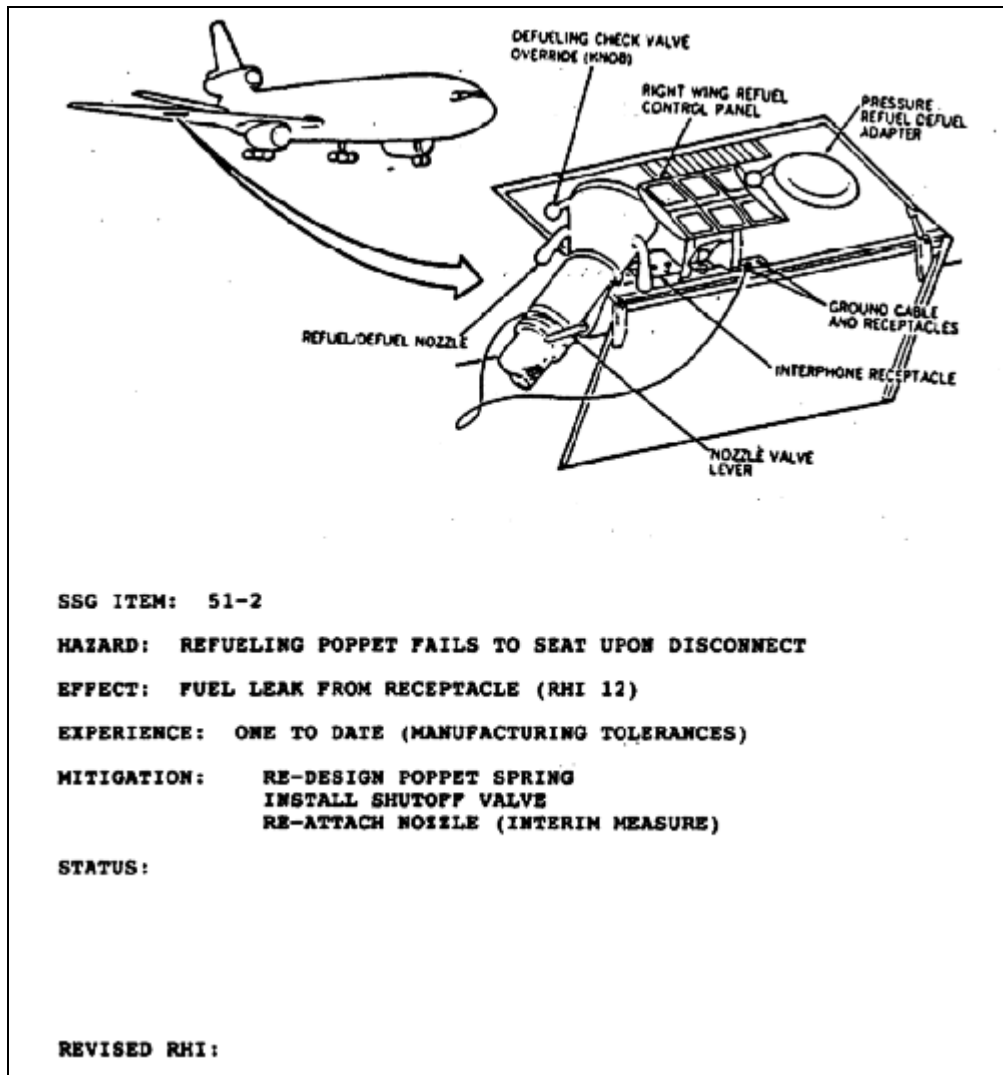ACC/DRF
ACC/DOYR
ACC/LG R
WR-ALC Materiel Safety Officer
AFOTEC/SE
LOCKHEED-MARTIN REPRESENTATION
GENERAL-ELECTRIC REPRESENTATION

Attachment 2

SAMPLE BRIEFING CHART

SSG ITEM: 51-2

HAZARD: REFUELING POPPET FAILS TO SEAT UPON DISCONNECT

EFFECT: FUEL LEAK FROM RECEPTACLE (RHI 12)

EXPERIENCE: ONE TO DATE (MANUFACTURING TOLERANCES)

MITIGATION: RE-DESIGN POPPET SPRING
                 INSTALL SHUTOFF VALVE
                 RE-ATTACH NOZZLE (INTERIM MEASURE)

STATUS:

REVISED RHI:

Attachment 3

SSG ACTION ITEM

ITEM NO:

DATE:

INITIATOR:

SUBJECT:

BACKGROUND:

RHI:

DISCUSSION:

RECOMMENDED ACTION:

ACTION AGENCY:

SSG ACTION:

STATUS:

REVISED RHI:

SIGNATURE:

DATE:

Attachment 4

F-X SYSTEM SAFETY GROUP (SSG) QUARTERLY PROGRESS REPORT

ITEM NAME:REPORT PERIOD:

ACTION OPR:

PROBLEM SUMMARY AND SOLUTION/PROPOSAL:

PROGRESS DURING REPORT PERIOD:

APPROXIMATE PERCENT COMPLETE:

CURRENT COMPLETION SCHEDULE/MILESTONES:

PLANS FOR NEXT 90 DAYS:

REMARKS/ROADBLOCKS/SUGGESTIONS:

REPORT PREPARED BY:APPROVED BY:

Table A4.1. Percent Complete Criteria.

5% - Problem assigned	55% - Prototype completed
10% - Exhibit(s) requested	60% - Prototype proven
15% - Exhibit(s) received	65% - Design work: completed
20% - Analysis underway	70% - Procurable package prepared
25% - Analysis completed	75% - TCTO proposal to CCB
30% - Solution(s) proposed	80% - TCTO approved by CCB
35% - Solution/action selected	
40% - Schedule/costs obtained/approved	90% - All documentation completed
45% - Purchase description available	95% - Installation started
50% - Contract authorized	100% - Item closed/completed